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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,266	07/07/2003	Nicholas C. Talbot	SS-410-127/DIV.II	8104

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EXAMINER	
ISSING, GREGORY C	

ART UNIT	PAPER NUMBER
3662	

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/615,266	TALBOT ET AL.	
	Examiner	Art Unit	
	Gregory C. Issing	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *07072003*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,163,294. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method of calibrating is inherently provided by the surveying instrument that includes a GPS receiver (76) for receiving at least one signal from a GPS satellite and providing precise timing information (1 PPS) derived from an atomic clock, a reference oscillator (74) responsive to the precise timing information, and a total station 72 comprised of a time-of-flight EDM device that utilizes the precise timing information count the number of cycles of the reference frequency between launch of an outbound and receipt of an inbound signal to determine a target range.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liessner et al in view of Osterdock et al and Ingensand.

5. Liessner et al teach an electronic distance measuring device EDM substantially as claimed including a reference oscillator 12 and an EDM device comprising a transmitter 28, receiver 36, phase measurement unit 24 comprising a time interval counter 30 and a computer 60. Liessner et al disclose an EDM device conventionally used in land surveying wherein a phase lag determines the distance and wherein the phase lag is measured by counting time clock increments between crossovers from the transmitted beam to the received beam (col. 1, lines 25-33). The measurement device of Liessner et al uses a high frequency clock signal derived from a high frequency reference oscillator signal (col. 2, lines 33- 41). Liessner et al differ from the claimed subject matter since the disclosed reference frequency generator is not disclosed as being controlled/calibrated by an external atomic clock including a satellite navigation receiver. Osterdock et al teach that all secondary frequency sources require periodic calibrations, usually against a local reference standard and that for the highest precision, comparison against a national reference standard. Additionally, Osterdock et al suggest various sources of the standard, including the use of GPS signals which can provide the user with very accurate, and traceable, frequency and time in a very inexpensive fashion. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Liessner et al by providing the required calibration of the reference oscillator by using the teachings of Osterdock et al who suggest the use of a GPS receiver to disseminate frequency and time standards of unprecedented accuracies, and which are locked to the satellites' atomic standards, thereby providing very accurate and traceable frequency and time very inexpensively. Additionally,

Ingensand teaches that it is known in the art of surveying using EDMs to integrate GPS therewith in order to survey remote points; thus, it is known to incorporate GPS receivers with EDMs in the field of surveying. This provides further motivation to combine the teachings of Liessner et al and Osterdock et al since the calibration could utilize accurate timing information already available via the GPS receiver. The features of the theodolites are conventional in the art.

6. As noted above, Liessner et al disclose an instrument for use in surveying that includes, as shown in Figure 1, a reference oscillator 12 providing a reference frequency, an EDM device 26 comprising a transmitter 28 for launching an outbound signal, a receiver 36 for receiving a reflected signal, a phase measurement device 24 connected to the reference oscillator, transmitter and receiver for outputting a time measurement 38 of the difference between the out-bound and reflected signals and a processor for determining the distance to target from the time measurement. Osterdock et al disclose (1) that all secondary frequency sources require periodic calibration, (2) for the highest precision, comparison against a national standard may be required and (3) the use of GPS provides a very inexpensive means of world-wide frequency and time dissemination system with unprecedented accuracies. The motivation to incorporate the teachings of Osterdock et al into the system of Liessner et al are clearly suggested by the references since Liessner et al utilize a reference oscillator whose accuracy inherently affects the accuracy of the distance measurement and Osterdock et al clearly disclose the requirement of calibrating frequency and time sources with a precision reference source as well as the use of GPS to provide the precision frequency source. Obviously, in order to use the GPS signal a GPS receiver is required. The cited prior art is therefore deemed to suggest the motivation to calibrate a reference oscillator using a precision reference source such as a GPS signal. Likewise, the

combination of references is deemed to disclose the claimed subject matter since the proposed combination would include a reference oscillator calibrated by a GPS signal, and an EDM device and a phase measurement device that utilizes the EDM timing information and the GPS-calibrated reference oscillator signal to provide timing information used for determining distance information. Only one secondary reference is cited to modify the primary reference and only one modification is actually made, that is to calibrate the reference oscillator using a GPS signal. The use of the GPS signal obviously, if not inherently, requires the use of a GPS receiver and the accuracy of the reference oscillator is inherently adapted to the accuracy of the calibration signal. i.e. the GPS signal. Hence, the prior art teaches that it is well-known to drive EDMs using reference oscillators, that it is well-known to use GPS timing information as a source of precise timing/calibration, that it is well-known for conventional oscillators to require calibration and it is well-known to integrate EDMs with GPS in surveying applications. Each of the elements of the claims are deemed to be known in the art. Additionally, the prior art set forth above, as well as included in the prosecution history, suggest the motivation to combine the teachings of the references.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Makynen et al disclose a time-of-flight laser rangefinder incorporating a tracking device what automatically aims a theodolite at a target. HP 58503A Brochure (*GPS and Precision Timing Applications*) discloses a range of timing and synchronization products based on GPS technology including use in general purpose calibration and manufacturing applications that require precision time or synchronization. Additionally, use of the HP Smart Clock integrated with a quartz oscillator, improves the performance making it equal to or better than a

rubidium-based solution as well as eliminates the need for frequent calibrations since the GPS reference source automatically ensures on-going accuracy (see pp. 22 and 24 specifically). HP SmartClock Technology Application Note 1279 discloses a calibration device for calibrating an oscillator using GPS signals. Journet et al disclose a conventional laser rangefinder, see Figure 1, e.g., that utilizes time-of-flight measurements by measuring phase shift. Ujiie discloses a frequency standard generator that uses a 1 PPS signal derived from GPS to calibrate a frequency source. Osterling et al disclose an apparatus and method for calibrating a frequency source using a network-generated signal, such a s GPS clock signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is (703)-306-4156. The examiner can normally be reached on Mon-Thurs 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (703)-306-4171. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

Gregory C. Issing
Primary Examiner
Art Unit 3662

gci